NT NAVAIR TECHNOLOGIES

Product Distribution Group

SOLUTIONS FOR THE WIRELESS WORLD

SOLUTIONS POUR UN MONDE SANS-FILS

Your account representative is:

2010/11

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DS3, Dual-DS1 Test Set: Gb310

Quickly monitor, test & verify DS3 & DS1 circuits with this Complete DS3, Dual-Independent DS1 test system.

Features

Integrated BRICK
- Simple Intuitive Use
- State-of-the-Art
- Cellular Backhaul Testing
- DS3 services testing
- DS1 or Dual-DS1 testing
- DS0 E911 Data Activity
- PRI-ISDN
- 4-wire DDS

Comprehensive DS3
- Auto, M13, C-bit, UnF
- B3ZS Line Coding
- Monitor & TERM modes
- Internal & Loop Timing
- ALARM Status & History
- Qualify DS3 Signal
- Auto-Frame to T3 circuit
- DS3 Frequency & Level

Dual-Independent T1's
- Test two (2) T1's at once!
- Auto, ESF, D4, Unframed
- B8ZS/AMI Line Coding
- Monitor, TERM & Bridged
- Internal & Loop Timing
- ALARM Status & History
- DS1 Frequency & Level
- DS1 Clocking & Slips

Signaling-TIMS Test Set: Gb104

Complete Signaling-TIMS Test set. Simple Graphic User Interface is also available for PC's, Laptops & PDA's!

Features

- Upgrade old HP4935's
- CO/PBX Emulation
- RING & Dial-tone!
- Wideband Mode
- Add DS3/DS1/PRI/DDS
- Rack-mount Version
- Simple Intuitive Interface with one-touch operation!
- State-of-the-Art Technology
- Upgraded HP4935A replacement!
- Voiceband: 600, 900, 1200 ohm
- Wideband: 100 and 135 ohm
- CO Modes with internal -48VDC bat, provides Dial-Tone and RINGING!
- PBX /Station Emulation Modes
- Loop-Start and Ground-Start modes
- DID-immediate and DID-wink modes
- Supports E911 services
- Real-time Signaling State Display!
- Monitors Line Voltages and Current
- Built-in User Manual with HELP & Tips
- Auto Frequency Sweep to 2MHz!
- Internal Speaker and Butt-set Jack
- Rugged Handheld and Rack mount

ROHDE&SCHWARZ

R&S®FSH4/8 Handheld Spectrum Analyzer

Key Features

- Frequency range from 9 kHz to 3.6 GHz or 8 GHz
- High sensitivity (<–141 dBm (1 Hz), with preamplifier <–161 dBm (1 Hz))
- Low measurement uncertainty (<1 dB)
- Measurement functions for all important measurement tasks related to the startup and maintenance of transmitter systems
- Internal tracking generator and VSWR bridge with built-in DC voltage supply (bias)
- Two-port network analyzer
- Easy-to-replace Li-ion battery for up to 4.5 h of operation
- Rugged, splash-proof housing for rough work in the field
- Easy handling due to low weight (3 kg with battery) and easy-to-reach function keys
- Saving of measurement results on SD card
- LAN and USB interface for remote control and transfer of measurement data
- R&S®FSH4View software for simple documentation of measurement results

R&S®FSH3/6/18 Spectrum Analyzer

Spectrum analysis anywhere, anytime – on earth and in space

The R&S®FSH is the ideal spectrum analyzer for rapid, high-precision, cost-effective signal investigations. It provides a large number of measurement functions and so can handle anything from the installation or maintenance of a mobile radio base station up to on-site fault location in RF cables to development and service – an extensive range of applications.

Key Features

- Robust edge protection, stable carrying handle
- Easy operation
- Four hours operating time on battery power
- Storage of up to 256 traces and setups
- Easy data transfer to PC
- High measurement accuracy
- Best RF characteristics in its class

There are many good reasons to keep an eye on the new R&S®FSL. For one thing, it's very transportable – at under 17 lbs, compact, and with battery operation, it can quickly turn up in places you might not expect. For another thing, you won't be the only one who wants to use it. After all, what analyzer in its class gives you an I/Q-demodulation bandwidth of 20 MHz? Or the functions of a high-end box at a midrange price? Or a measurement uncertainty of just <1 dB? And looks this good doing it? None but the R&S®FSL.

- FSL-K93 (option) WiMAX Application Firmware for spectrum and modulation measurements on stationary and mobile WiMAX signals.
- 9 Khz to 3, 6 or 18GHz, with or without tracking generator
- Best performance in its class: DANL –142 dBm, IP3 typ. +10 dBm, phase noise typ. –103 dBc
- Comprehensive measurement routines: TOI, OBW, Time Domain Power, CCDF, channel/adjacent channel power
- LAN interface and USB host adapter
- Unique slide-in upgrade design: all hardware options are user-installable without opening the housing

Note: there is one vital accessory for your R&S®FSL that we don't carry. You'll have to visit the hardware store for that.

RF-Reflection Power Meters

Key Features

Directional Power Meter NAS is the ideal servicing unit wherever power and SWR of all kinds of radio equipment have to be measured. Insertion units for the whole field of mobile radio - including GSM applications – make the NAS a versatile unit and an investment for the future.

Directional Power Meter NRT

Key Features

Directional power meters are connected between source and load and measure the power flow in both directions. The power applied to the load and the reflection can thus be measured.

Compared to low-cost instruments, power meters like NRT provide a number of benefits: most importantly high measurement accuracy through excellent directivity and a measurement method that determines the average power like a thermal power meter.

The instruments thus provide correct measurement results even in case of modulation or in the presence of several carriers. Power Sensors NRT-Z43/-Z44 feature low insertion loss, very good matching and excellent intermodulation characteristics: the signal to be measured is virtually unaffected, the sensor is fully transparent.

NRVD Power Meter

Key Features

NRVD functions like two independent NRVS power meters in one enclosure performing simultaneous measurements and exchanging data with each other. The two channels can be set separately so that two completely different measurements can be carried out at the same time. The two measured values can also be related to each other for readout of reflection coefficient, SWR or return loss, for instance.

Power Meter R&S NRP

Key Features

- Dynamic range up to 90 dB (sensor dependent)
- Level range -67 dBm ... +45 dBm (sensor dependent)
- Measurement speed 1500 measurements per second in the buffered mode
- Linearity uncertainty 1.5 % (20 to 25°C, f = 100 MHz to 4 GHz)
- Precise average power measurements irrespective of modulation type and bandwidth
- Up to 4 power sensors on one R&S NRP base unit simultaneously
- Flexible measurements on up to 128 time slots per power sensor (26 time slots with base unit)
- Direct USB connection from sensor to a PC
- S parameter correction of components between sensor and test object
- 2 years calibration cycle for base unit as well as for the sensors
- Small dimensions (WxHxD) 274 mm x 112 mm x 267 mm
- Low weight < 3.0 kg

URV55 Millivoltmeter

Key Features

Millivoltmeter URV55 is suitable for voltage measurements up to 3 GHz as well as for power and level measurements up to 40 GHz. Thanks to probes with calibration data memory and temperature sensors, which make adjustments by the user superfluous, URV55 provides at all times high-precision measurements free of operator's errors.

RF & Microwave NRP-Z Smart Sensors

Key Features

- Precise average power measurements
- Direct USB connection to PC or other Rohde & Schwarz instruments
- S Parameter correction of components between sensors and test devices
- Flexible measurements on up to 128 time slots per power sensor
- 2 year calibration cycle

ZVL Vector Network Analyzer

The cost-efficient compact class in network analysis

- Frequency ranges from 9 kHz to 3 GHz/6 GHz/13.6 GHz
- Wide dynamic range: >115 dB, typ. 123 dB
- Bidirectional test set: display of all four S-parameters
- 75 Ω version from 9 kHz to 3 GHz for TV/CATV
- Complete spectrum analyzer as an option
- Compact size and low weight (<7 kg)
- Digital communications standards
- Accurate power measurement (USB connector for R&S® NRP-Z power sensor series)
- Compact size and low weight (<7 kg)
- 12 V DC operation and internal battery
- Connection for external monitor

The New Standard of Excellence in Analog Signal Generation

R&S®SMA100A

The R&S®SMA100A combines superior signal quality with a very high setting speed, making it the ideal generator for any task in development, production, service or maintenance.

Key Features

- Frequency range from 9 kHz to 3 GHz or 6 GHz with or without an electronic attenuator
- CW signal and all common types of analog modulations (AM, FM, φM, PM)
- Very low phase noise
- High power output as standard
- Optional removable mass memory card

Setting Standards in Mid-range Analog Signal Generation

R&S®SMB100A

The R&S®SMB100A sets new standards in its class due to its outstanding characteristics. The instrument combines excellent signal quality with very high output power, which makes it ideal for any task.

Key Features

- Frequency range from 9 kHz to 1.1 GHz, 2.2 GHz, 3.2 GHz or 6 GHz
- Best signal quality in its class
- 3 year calibration cycle
- Highest output power in its class
- All-purpose RF source

Best Price/Performance Ratio and Smallest Size in its Class

R&S®SMC100A

The R&S®SMC100A is the newest analog signal generator that Rohde & Schwarz has to offer. It has a very small size and is priced very attractively to reduce overall total cost of ownership.

Key Features

- Frequency range from 9 kHz to 1.1 GHz or 3.3 GHz
- Outstanding signal quality
- All analog modulation types and high output power as standard
- Electronic attenuator
- Low phase noise and fast switching time

Generating Signals for Today and Tomorrow

R&S®SMBV100A

The R&S®SMBV100A is a state-of-the art vector signal generator that has been designed with a future-proof hardware concept.

Key Features

- Frequency range from 9 kHz to 3.2 GHz or 6 GHz
- Excellent characteristics and high output power as standard
- Wide RF signal bandwidth of up to 120 MHz with internal signal generation
- Maximum supported external RF bandwidth is 500 MHz
- Supports all of the important digital standards available now such as WiMAX, 3GPP and LTE, as well as any future digital standards still in development

Compact, cost-effective measuring receiver

R&S®ESL EMI Test Receiver

The R&S®ESL EMI test receiver combines two instruments in one, measuring EMC disturbances in accordance with the latest standards and also serving as a full-featured spectrum analyzer for diverse lab applications. The R&S®ESL is the ideal instrument for small budgets.

Key Features

- Frequency range from 9 kHz to 3 GHz or 9 kHz to 6 GHz covering almost all commercial EMC standards
- First-ever combination of an EMI test receiver and spectrum analyzer in the entry-level class
- All major functions of an advanced EMI test receiver, including fully automated test sequences
- Weighting detectors: max./min. peak, average, RMS, quasi-peak as well as average with meter time constant and rms-average in accordance with the latest version of CISPR 16-1-1
- Compact, lightweight instrument, can be battery-powered for mobile applications

R&S®HE300

Active Directional Antenna

20 MHz (optional 9 kHz) to 7.5 GHz

The practical and very wideband R&S®HE300 active directional antenna locates transmitters and interference sources when combined with portable receivers (e.g. the R&S®PR100).

Three exchangeable antenna modules that are supplied with the antenna cover the 20 MHz to 7.5 GHz frequency range. An additional module (R&S®HE300HF for 9 kHz to 20 MHz) is available as an option.

The modules can be plugged into the handle with the correct orientation for vertical or horizontal polarization and then mechanically locked in place.

A built-in, low-noise wideband amplifier can be activated to enhance system sensitivity (active mode).

In passive mode, the amplifier is bypassed so that the R&S®HE300 can also be used in the vicinity of strong signal sources.

Key Features

- Unambiguous radiation pattern
- Direction is found by orienting antenna toward maximum field strength
- Very wideband performance in a practical size
- Low weight, due to optimized selection of materials, ensures fatigue-proof handling
- Horizontal and vertical polarization
- Wide dynamic range
- Passive antenna if amplifier is switched off

SignalHawk™

SIGNALHAWK™ VNA | Spectrum Analyzer with Power Meter Option

MODEL SH-362S: Spectrum Analyzer & 2-Port VNA
MODEL SH-361S: Spectrum Analyzer & 1-Port VNA
MODEL SH-362: 2-Port VNA (325MHz to 3.6GHz)
MODEL SH-36S: Spectrum Analyzer (100kHz to 3.6GHz)

Bird Technologies SignalHawk™ Analyzes radio frequency spectrum. Measures intended and interfering signals. Allows setup of parameters such as frequency, amplitude, and markers. Graphically displays signal amplitude vs. frequency and saves traces.

MODEL SH-36S SIGNALHAWK™

SignalHawk™ VNA|Spectrum Analyzer

KEY FEATURES

- Fast, Accurate, and Sensitive: -42 dB Directivity and-135 dBm Noise Floor
- Large High-Resolution Display: Full Color, Indoor/Outdoor Viewable
- Easy-to-Use: Intuitive Menus, One-Button Setup, and On-Board Help
- Long Battery Life: 5.5 Hours per Charge, Field Replaceable Battery
- Rugged: Drop Tested per Military and European Standards
- USB Connectivity: USB Drive Stores 90,000 Traces
- Spectrogram
- GPS
- Power measurement interface
- Internal Bias – Tee

ALSO AVAILABLE

Bird®Rack-Mount SignalHawk™ Spectrum Analyzer

Model SH-36S-RM: 100kHz to 3.6 GHz

Remotely analyzes the radio frequency spectrum. From your office: measures intended and interfering signals, allows setup of parameters such as frequency and amplitude markers. Also, remotely displays signal amplitude vs. frequency and saves traces to your PC.

Bird®PC SignalHawk Spectrum Analyzer

Model SH-36S-PC: 100kHz to 3.6 GHz

Analyzes the radio frequency spectrum. Measures intended and interfering signals, allows setup of parameters such as frequency and amplitude markers. Also, displays signal amplitude vs. frequency and saves traces on your PC.

WORLDWIDE APPLICATIONS

Cellular, PCS, DCS, 2G, 3G, 4G, CDMA, cdmaOne, CDMA 2000, 1x, 1x EV-DO, GSM, GPRS, EDGE, UMTS, HSDPA,W-CDMA, TDMA, AMPS 802.11, Bluetooth, Broadcast, Emergency, Fire, GPS, HDTV, IBOC, In-Building, Lab, Microwave, NPSPAC, Paging, Police, Private, Project 25, Public Safety, Tactical Military, Telematics, Tetra, Trunking, Utilities,WiMAX,WLAN and WLL.

Bird® Model 5000-XT

NEW

Hand-Held Digital Power Meter

The hand-held digital power meter has been completely redesigned with the new Bird® 5000-XT. Ideally suited for field techs and engineers who need to make power measurements anywhere they go, the 5000-XT's new user interface has an intuitive, menu-driven design, making it the easiest to use on the market. It's operable even with one hand and compatible with all our field and legacy sensors.

Bird® AT Series
AT-500 & AT800

Antena Testers

The **Bird AT-Series Antenna Testers** provide a cost-effective, fast, graphical way of determining the quality of mobile and base station antennas.

- Rugged, easy-to-use, hand-held design with extended battery life makes it ideal for use in the field.
- Tests the system in VSWR, Return Loss, Match Efficiency, or Reflection Coefficient (Rho)
- Single frequency readings and frequency sweeps allow for everything from pinpointests to system optimization and tuning.
- Can save up to 12 traces for comparison and tracking over time
- RS232 Interface allows communication with a PC for saving traces using the optional software.

Bird® Antenna Cable Monitor

BIRD® ANTENNA & CABLE MONITOR

Accurately detects antenna system degradation and failures

- Compatible with analog or digital cellular and two-way radio systems
- Worldwide applications include Tetra, Cellular, PCS and many others
- Monitors VSWR and power levels and provides alarm outputs
- Sensitive to antenna faults that internal transmitter VSWR monitors may not detect
- Local or remote operation via PC software
- Ideal for multi-carrier applications

Antenna & Cable Monitor

PC Software Tool 7005A970 (Optional Accessory)

Minimize Downtime
Keep Your Critical Antenna Sites Up & Running

Bird® Wideband Power Sensor
5012A, 5016, 5017

NEW

Bird's® Wideband Power Sensor (WPS) never requires field calibration, only requires calibration once per year and is traceable to National Institute of Standards and Technology (NIST). The WPS measures True Average Power, Peak Power, and Duty Cycle directly with exceptional accuracy and uses these precise measurements to calculate a wide range of other important factors, such as VSWR, Return Loss, Reflection Coefficient, Crest Factor, Average Burst Power, and CCDF.

PROBLEMS

Downtime is necessary
Have analog, digital, and multi-carrier signals to measure
Tight budgets
Varying field tech skill levels
Need greater confidence in measurement

SOLUTIONS

- Monitor and perform maintenance for monitoring while DUT is in-service
- Measure forward and reflected power to troubleshoot system failures
- Modulation independent measurements
- USB connectivity, no meter required
- Complimentary Virtual Power Meter (VPM2) software
- Sensor plugs and plays with 5000-XT meter
- No field calibration required
- NIST traceable calibration

APPLICATIONS

WPS measures: Analog Cellular, Digital Cellular, 3G, 4G, Tetra, APCO/P25, Trunking, CDMA, TDMA, WCDMA, GSM, Transportation, Tactical Military, Radar, Avionics, Marine, LMR, Analog Broadcast, Digital Broadcast, GSM, GPRS, EDGE, UMTS, HSDPA, Bluetooth, Fire, GPS, NPSPAC, Paging, Project 25, Public Safety, Telematics, Utilities, WIMAX and WLAN.

Measurements performed: Peak power, true average power and Duty Cycle.

Calculations Performed: VSWR, Return Loss, Reflection Coefficient, Crest Factor, Average Burst Power and CCDF.

Site Analyzer
EX Series

SA-6000EX (25-6000 MHz)
SA-2500EX (780-2500 MHz)
SA-1700EX (25-1700 MHz)
SA-1700EXP (25-1700 MHz)

- **ONE UNIT** covers the entire 25-6000 MHz range!
- Easy to operate and field ready for first-time, occasional and experienced users
- Suitable for use in Worldwide Cellular and PCS/DCS systems; supporting measurement of CDMA, GSM, TDMA and AMPS modulation schemes
- Other applications include 3G, Broadcast, Government, Tactical Military, Microwave, Paging, Public Safety, Trunking, WLAN and WLL, and TETRA. See model matrix below
- Color display is clearly visible in direct sunlight
- With a single download you can view data as Distance to Fault or Measurement Match-**no need to store two traces**.
- FDR (Frequency Domain Reflectometry) measurement method results in a highly reliable assessment of the health of critical components in your system; ultimately providing a "heads-up" before a failure occurs
- Fault location or DTF mode indicates VSWR or Return Loss levels at each point along the cable and antenna system length
- Cable Loss function measures insertion loss of the cable system over a given frequency range

Model #	SA-1700EX	SA-1700EXP	SA-2500EX	SA-6000EX
Frequency Range	25-1700 MHz	25-1700 MHz	780-2500 MHz	25-6000 MHz
Frequency Resolution	25 kHz; 25-800 MHz 50 kHz; 800-1700 MHz	25 kHz; 25-800 MHz 50 kHz; 800-1700 MHz	50 kHz	25 kHz; 25-800 MHz 50 kHz; 800-2500 MHz 150 kHz; 2500-6000 MHz

Carrier to Noise Generator CNG-70/140

APPLICATIONS:
- Bit error rate/SINAD testing
- SATCOM modems
- Channel impairment tests
- Development, qualification, and verification testing
- Manufacturing test

FEATURES:
- C/N, C/No, Eb/No, and C/I modes
- 1 or 2 independent RF channels
- Continuous input power monitoring
- Un-interrupted signal path during calibration cycle
- IEEE-488.2 and RS-232 interface
- Easy to read VFD display

Satellite Link Emulator SLE700

APPLICATIONS:
- Earth terminal testing
- Satellite payload testing
- Satellite system integration test beds
- Mobile transceiver testing

FEATURES:
- **Precision Test Models**
  Test scenarios are user-defined, based on ephemeris data or satellite orbit models.
- **Multiple Orbit Models**
  Emulates earth-to-satellite-to-earth, or earth-to-satellite links; Low Earth Orbit; Medium Earth Orbit, Geostationary and Geosynchronous
- **Two Operating Modes**
  In Static mode, link parameters are set to fixed values. In Dynamic mode, data files are used to vary the link parameters in real time.

RF Converter Series UDC-172-302-2

APPLICATIONS:
- A laboratory workhorse
- Programmable LO for frequency converters
- Frequency hopping source
- RF device characterization
- Tracking generator source

FEATURES:
- Low noise (-103 dBc/Hz 1 kHz offset @ 1GHz)
- Fast switching (<2msec typ.)
- Small and lightweight (10” x 10” x 3”)
- Non-volatile memory for storage/recall of instrument settings
- IEEE-488.2, LAN, and RS-232 interfaces standard

OPTIONS:
- Fast switching speed (200 usec)
- File driven hopping/swept frequency mode

Precision White Gaussian Noise Generator

APPLICATIONS:

- Bit error rate (BER) and SINAD testing
- Component and subsystem linearity characterization
- Wireless link emulation

FEATURES:
- Calibrated noise density over entire operating frequency
- Noise power/bandwidth and noise density control
- Solid state noise attenuator with 0.0156 dB resolution
- IEEE-488.2 interface

GENERAL DYNAMICS

The R2600 Series: The industry proven test solution for APCO™ Project 25 SMARTNET/ SmartZone®, ASTRO®, SECURENET®, and conventional two way radio.

The R2600 family of Communications System Analyzers performs tests normally associated with these instruments:

- RF Signal Generator
- Sensitive Measurement Receiver
- Spectrum Analyzer
- Full Band Duplex Offset Generator
- Frequency Counter
- AC/DC Voltmeter
- 50 kHz Oscilloscope
- RF Wattmeter
- Signal Strength Meter
- Frequency Error Meter
- SINAD Meter
- Distortion Meter
- Sweep Generator
- Audio Generator
- Modulation Analyzer
- Signaling Simulator
- RF Scan/Counter
- High Performance Spectrum Analyzer with Markers

Optional in R2600 & R2625; standard in R2670:

- Cable Fault Locator
- Tracking Generator
- Programmable Test Set-Ups

NEW General Dynamics R8000 Radio Communications Analyzer

- The R8000 Radio Communications Analyzer utilizes leading-edge software defined radio technology to deliver previously unimaginable results:
- A truly portable instrument with more functions than today's bench top analyzers.
- Weighing only 14 pounds, the R8000 gives service technicians power and flexibility not previously available in this type of instrument.
- This, combined with the instrument's feature-packed spectrum analyzer, makes the R8000 ideal for taking to sites for infrastructure maintenance and interference measurement.
- The instrument's bright 8.4" color LCD screen is well visible in sunlight and features wide viewivng angles. MORE

NEW **P-25 Performance**

The R8000 is the worlds first truly portable test set and delivers fully functional P-25 test capability.

The R8000's P-25 test suite includes:

- Patented Voice Playback Test
- Generate/Receive V.52 (0.153) test pattern BER test
- Generate/Receive 101Hz test pattern BER test
- Power Meter
- Frequency Error
- Modulation Fidelity
- Symbol Deviation
- Eye test pattern
- C4FM generate capability

APCO is a registered trademark of the Association of Public Safety Officials ASTRO, SECURENET and SMARTNET/SAMARTZONE is a registered trademark of Motorola Inc.

GENERAL DYNAMICS

R2660 iDEN™ Digital Communications System Analyzers

FEATURES:

- Average power meter
- Frequency error meter
- SQE (Signal Quality Estimate)
- Tracking generator
- Cable fault locator
- High stability oscillator
- Enhanced spectrum analyzer with markers
- Test memory presets
- BER (Bit Error Rate)In addition to offering all the standard system features, the R2660 also includes several high performance features for testing more sophisticated systems. R2660 Standard System Capabilities

iDEN-Specific Test Capabilities

- Supports both 6:1 and 3:1 TDMA format
- Subscriber unit testing in dynamic call simulation mode including vocoder for live voice testing
- Subscriber unit testing in test mode
- Base site transmitter testing under operating conditions
- Base site receiver BER testing General Diagnostic Features

R2670B Communications System Analyzer Radio and Paging Service

FEATURES:

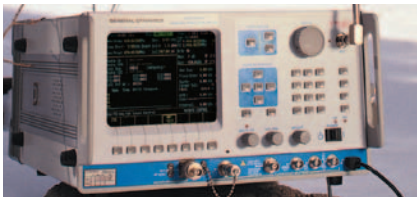
- Both VSELP and IMBE compatible vocodes
- SMARTNET/SmartZone Type 1,1}Ipe I EP II,1}Type II)
- SECURENET Secure Voice
- Multiple encryption formats: AES, DES, DES-XL, DES-OFB, DVI.XL & DVP-XL
- Programmable with compatible KVL – no need to only utilize the built-in test keys
- ASTRO trunking with! both VSELP and IMBE vocoders
- Project 25 digital trunking with support for Linear Simulcast Modulation (LSM) -flash upgrade to system release 6.1 coming soon. The R2670 can stand up to heavy field use with a proven 33,000 hour MTBF, and a choice of AC, DC, or battery operation.

R2600D – For Conventional Radio and Paging Service

FEATURES:

- RF Signal Generator
- Sensitive Measurement Receiver
- Spectrum Analyzer
- Duplex Offset Generator
- Frequency Counter
- AC/DC Voltmeter
- 50 kHz Oscilloscope
- RF Wattmeter
- Signal Strength Meter
- Frequency Error Meter
- SINAD Meter
- Distortion Meter
- Sweep Generator
- Audio Generator
- Modulation Analyzer
- Signaling Simulator
- RF Scan/Counter

R2680 – MPT1327 Trunking Communications System Analyzer

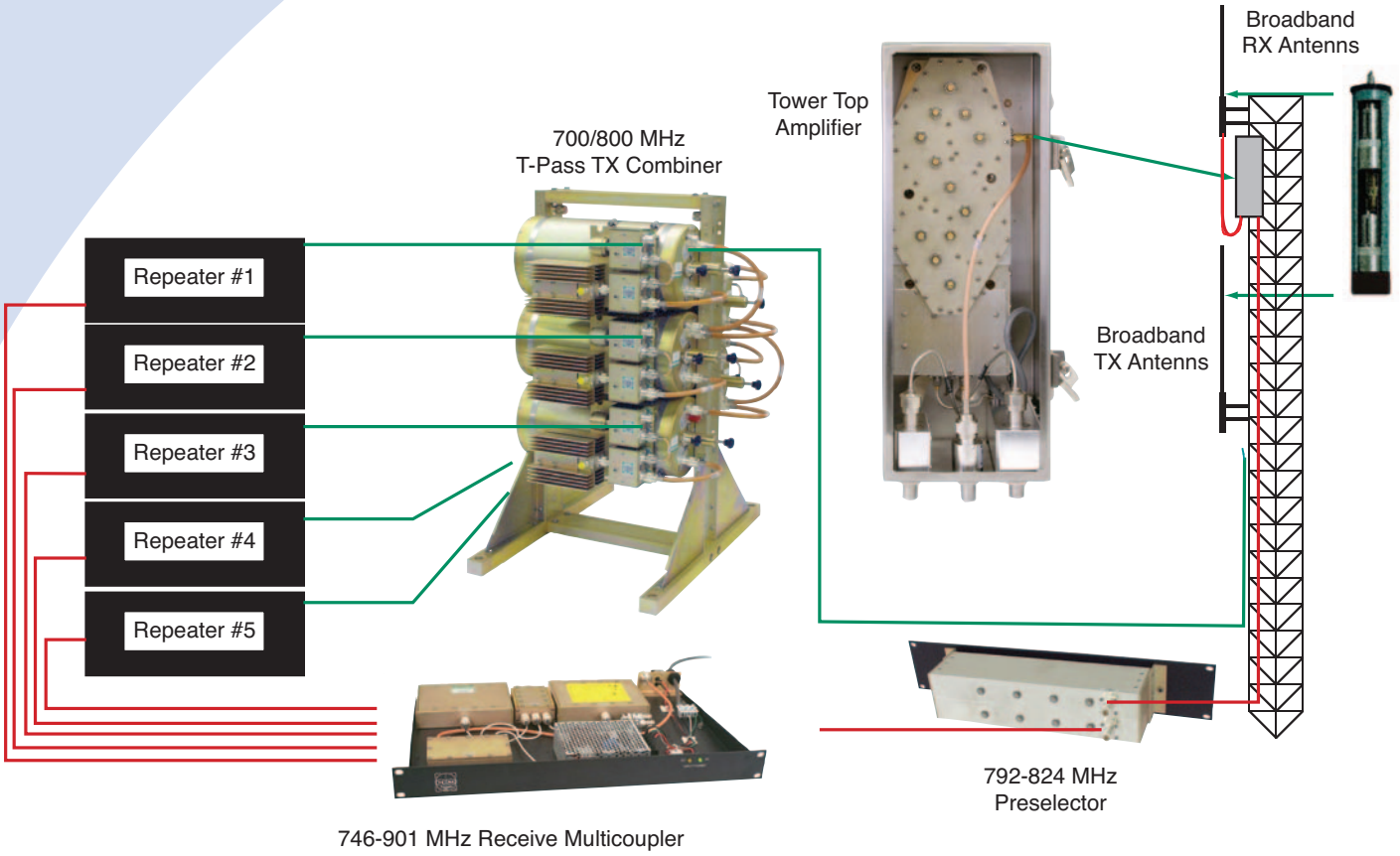


MPT1327 Test Parameter Entries:

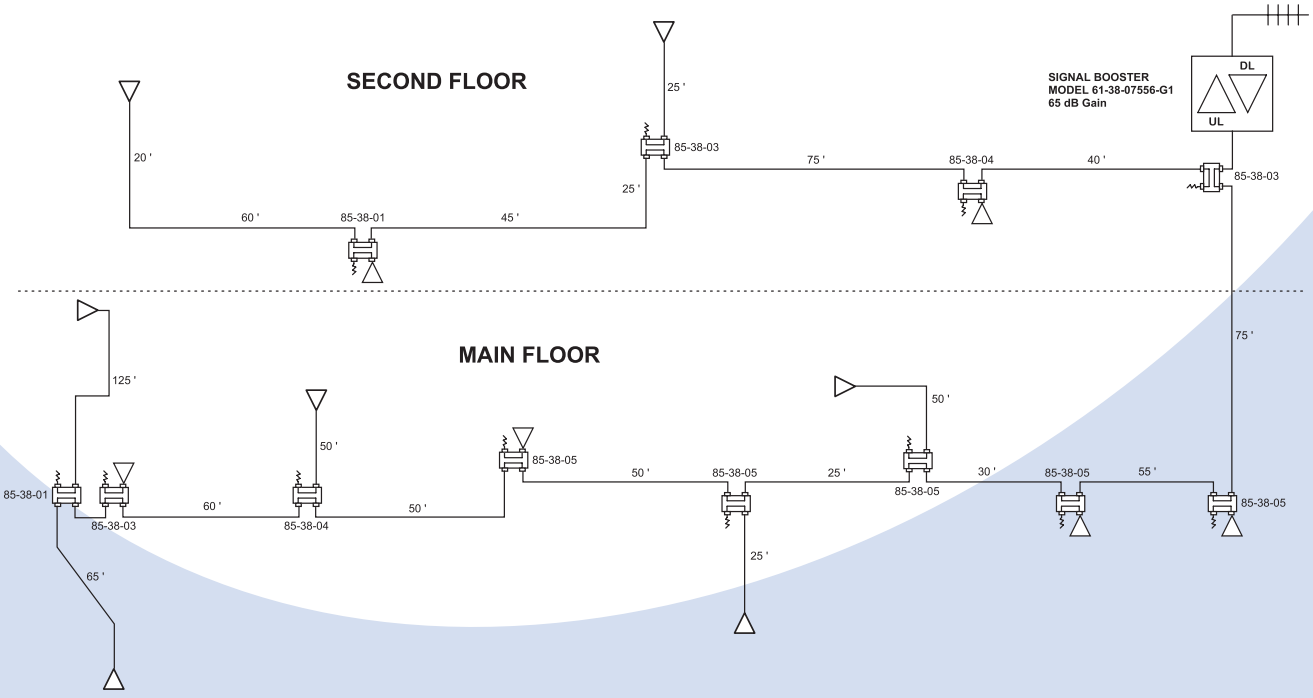
(Dependent on Test Selection)

- Signaling Type
- System ID
- Control Channel Number
- Traffic Channel Number
- Call Sequence
- Emergency Priority
- Call Set-up
- Radio ID2 (for System Initiated Tests)
- Group ID
- Group Call Type
- Status Code
- Data Codewords
- Signaling Parameters

RF INFRASTRUCTURE PRODUCTS



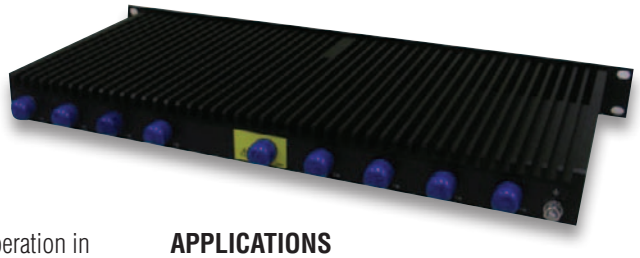
COMPLETE SYSTEMS SOLUTIONS



Multiband Shorthaul Control Station Combiner

43-05-01 Series

BTG, TX RX System multi-channel multi-band combiners provide frequency-agile operation across multiple bands. Interoperability can be combined into a single network for efficiency.



PROBLEMS

Many bands on site with frequencies from VHF to 900 MHz

Standardization across all sites

Space constraints

Cost reduction

SOLUTIONS

- Multiband combiner allows operation in multiple bands
- Advance coupler technology with no need for tuning — control stations can be connected without regard to frequency
- Low Profile for space efficient installation
- Multiple bands can utilize the same combiner for cost reduction

APPLICATIONS

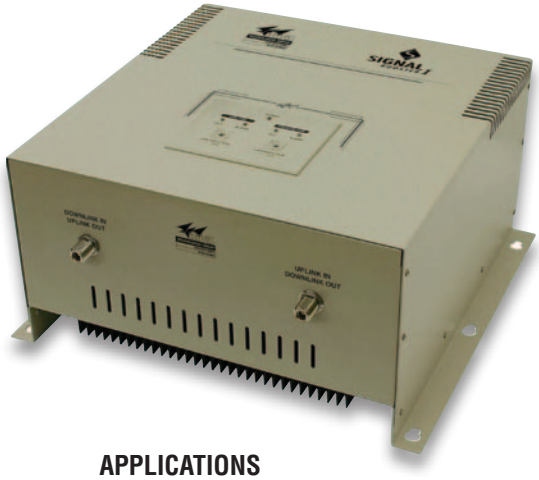
Control Station Combiners operating in multiplebands may be used to reduce the number of antennas required on a communications site while also ensuring that predictable radio-to-radio isolation is maintained at all times — irrespective of individual radio's Tx or Rx operating mode or antenna isolation characteristics.

Is ideally used with multiband coupler

Bird® SB I Series Signal Boosters

62-89B, 62-90A Series
NPSPAC

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.



PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

SOLUTIONS

- Bird® SB I is available in two output power models:
  - High power model (+35 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

Public Safety, Private Wireless networks

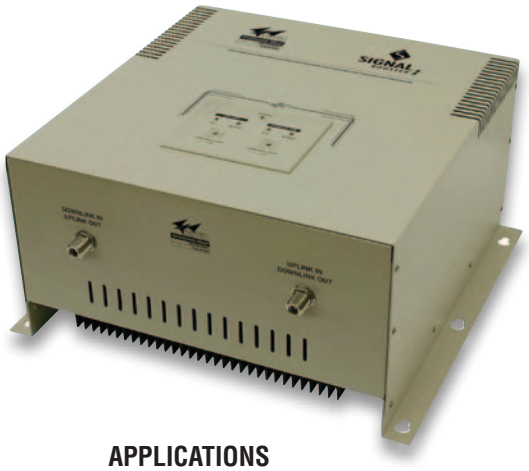
Excellent selectivity for operation in a shared frequency band

Bird® SB I Series Signal Boosters

62-83E-Series

Dual Band 700/800 MHz

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.



PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

Need to provide coverage for both 700 MHz and 800 MHz

SOLUTIONS

- Bird SB I is available in two output power models:
  - High power model (+34 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980
- SB I dual band provides coverage of both frequencies in one unit

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

Public Safety, Private Wireless networks

Excellent selectivity for operation in a shared frequency band

Bird® SB I Series Signal Boosters

62-91-Series

Cellular A, B, & A/B Bands

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.

PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

SOLUTIONS

- Bird SB I is available in two output power models:
  - High power model (+34 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980

APPLICATIONS

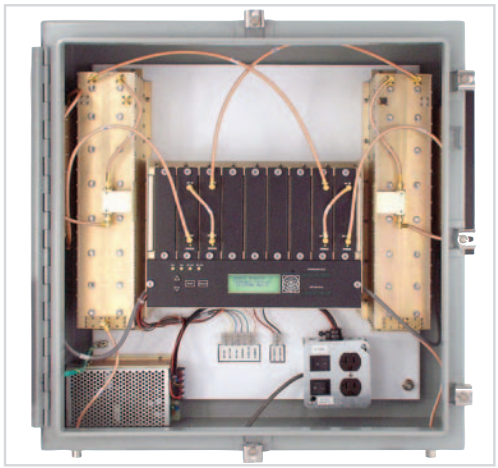
Cost effective in-building coverage solutions for applications in critical communications systems

Coverage of full Cellular A/B bands or each band individually

Excellent selectivity for operation in a shared frequency band

Signal Booster II

800 MHz-Series



Mission Critical Reliability for In-building Coverage . . .
The *New* **Signal Booster II** provides Public Safety grade reliability and coverage in disadvantaged RF locations for First Responders, Public Safety/Governmental agencies and Private System Users. Reliable RF coverage is gained in basements, parking garages, correctional facilities, courthouses, hospitals, malls and schools. Other challenging environments covered by the **Signal Booster II** product include subways and rapid transit systems, airports, stadiums/ arenas, high-rise buildings and large private enterprise facilities and campuses.

Whether you are on the front line and depend on a reliable communication system or you are the systems integrator responsible for implementing a dependable system, this new compact design facilitates installation and system optimization for rock solid operation via a simple man-machine interface. Imbedded features for ease of initial setup include decoupled test points for signal level detection, menu driven gain setting, front panel LED monitors for amplifier and power status, and an at-a-glance LED bar graph to indicate relative level of Output Level Control (OLC). Additionally, this product offers a unique on-board OLC DataLog feature that archives a User Signal Profile to facilitate optimum system configuration and performance.

Output Level Control (OLC) Circuit Monitors and Controls RF Output Power
- Maintains maximum required output power while preventing damage and excessive emissions per FCC requirements
- Easy-to-read LED bar graph
- Unique OLC DataLog feature facilitates system maintenance and optimization

Decoupled RF Test Points For Simplified Service
- Allow fast system measurements in both uplink and downlink directions
- Monitor signals for performance optimization
- Integrated design facilitates non-intrusive measurements

Secure, Non-Vented NEMA Enclosure Suitable for Extreme Indoor and Outdoor Environments

Simple Setup is Achieved Via an Integral, Man-Machine Interface
- No Tools Required

Optional Features Available
- Comm Card II for remote communications and control
- Fiber optic link interface
- Redundant PA configuration
- -48 VDC input

DC Backup Interface Accepts +24 to +30 VDC and optional -48 VDC

Microprocessor Controlled Fault Monitoring and Alarming Ensures Reliable Operation and Flexible Configuration
- Control system continuously monitors parameters including voltage, current, temperature and OLC activity
- LEDs on each module quickly annunciate source of fault
- Simple, back-lit liquid crystal display (LCD) and switch control
- Fault triggers annunciation on panel, alarm contact closure and internal recording of failed subsystem

Card Cage Modularity
- Easy “slide-in” replacement process
- Facilitates ease of service and system configuration

High Performance Bandpass Filters
- Configured to customer requirements and addresses many specifications requiring custom passbands
- Models available with passbands that range from 3 MHz (NPSPAC with excellent out-of-band rejection) to 18 MHz for full band coverage

Programmable Gain Setting
- Ease of initial configuration via front panel
- When used in conjunction with OLC DataLog, simplifies post installation adjustments

Three Major Gain Ranges Available
Low:+ 45 dB, Medium:+ 60 dB, High:+ 80 dB

NEW

All Signal Booster II products comes with a 5 year OEM warranty

Bird® Channelized Signal Booster

Model 611-70-Series

Bird Technologies Group (BTG), TX RX Systems Channelized Signal Booster operates in the 450-512 MHz range available in 1-30+channels. Intuitive user interface allows booster to be easily configured for changing RF environments. Channel bandwidth isuser selectable (12.5, 25, and 50 kHz standard or custom).Tone squelch capability is also available and individually configuredper channel.

PROBLEMS

Noise and Interference that cause communication problems in a crowded spectrum.

Changes in RF environment

System coverage is difficult to assess

SOLUTIONS

- Channelized booster amplifies narrow band channels. Amplifying only the desired spectrum prevents interference to other users.
- Modular design facilitates fast and easy reconfiguration, expansion, and redundant capability. Userinterface also provides maximum flexibility to mplement changes to the system such as output power, center frequency, filter shape, and group delay.

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

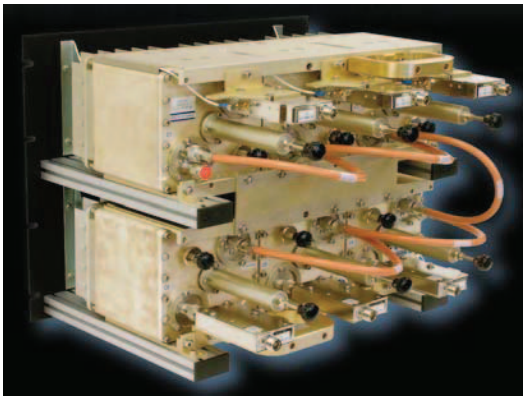
Public Safety, Private Wireless networks

Excellent selectivity for operation in a shared frequency band

Bird® Compact Ceramic NEW

TX Combiner

BTG, TX RX System brand UHF Ceramic TX Combiner combines up to 6 transmitters onto a single antenna. With a footprint that's more than 50% smaller than comparably performing 10" cavities. This optimizes valuable space for your radio equipment, which in an era of escalating lease costs, makes it the perfect solution for expansion. And because of our modular design, you can purchase in single-channel increments. Plus, it delivers the kind of high performance and minimum interference you've come to expect from Bird®.



PROBLEMS

May need to minimize the number of antennas at a communication site

Need to maintain or minimize additional costs associated with space in a radio shack / transmitter shelter

Need to minimize interference with competing communication systems

And may lack the time or expertise to integrate the solution into the overall radio system

SOLUTIONS

- Can combine up to six transmitters onto a single antenna which efficiently utilizes valuable rack and shelter space
- Our units provide valuable real estate in small shelters where traditional T-Pass combiners are too large
- System-level signal analysis (including interference mitigation) for each customer application
- Offer complete solutions from system design through individualized configurations, installation support, and maintenance programs.

APPLICATIONS

Any communications system installation whereyou need to reduce the number of antennas on atower.

Any communications system designed to minimize tower size and maximize site space

Secured applications that require equipmentunder lock and key

Tower Top Amplifier System

429-83H-01-T & 429-83H-01-M

The new compact Tower-Top Amplifier (TTA) system is a high performance, quadrature-coupled low noise amplifier (LNA) designed to increase the performance of a Base Transceiver Station (BTS) while ensuring reliable communications for critical Public Safety applications. This increase in sensitivity can make up for the imbalance between mobile and handheld users in critical systems.

The TTA system consists of two components: the Tower-Top Amplifier mounted close to the antenna and the Receiver Multicoupler base unit. To reduce the size of the TTA and simultaneously provide 120 dB of isolation of a TX carrier, filtering has been split between the TTA and the base unit.

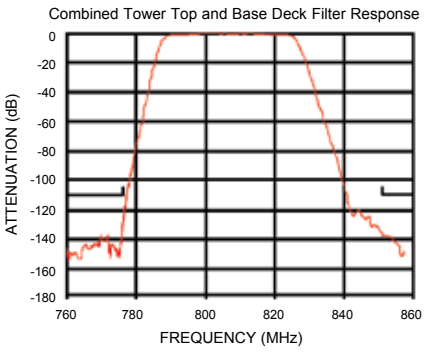
Two independent LNA's, each powered by separate bias circuits, provides component redundancy as well as excellent intermodulation (IM) performance. Microprocessor-controlled fault detection circuitry provides continuous monitoring and switching of each quad-LNA while sending operational data to the base unit for at-a-glance status reporting and form C contact alarm switching.

For AISG/EIA-485 data communications between the TTA and base control unit, a custom PolyPhaser™ lightning protector and a CAT-5E cable are installed at the transmission lines building entry-point ground plate. The surge protector not only passes the DC current that powers the TTA but also generates the low frequency subcarrier for AISG/EIA-485. If the data cable is damaged, removed or not installed, the TTA will continue to operate however, the status and alarm functions will not be available at the base. For testing and diagnosing problems on the main receive line, a test transmission line is required. The system will continue to operate if the test line is damaged or not installed however, an alarm will be continuously set.

The TTA System consist of two components: Receiver Multicoupler & Tower Top Amplifier

Features:

- Redundant quadrature LNA's and automatic solid-state back-up switching ensures reliable communications
- PolyPhaser™ impulse suppressors provide protection from lightning damage on all I/O ports
- AISG/EIA-485 compatible for data communications between TTA and Receiver Multicoupler
- RF test port enables gain, sensitivity and desensitization measurements from ground level
- Compact, weather-resistant stainless steel modified NEMA 4X enclosure
- Webpage user interface available for controlling and monitoring of amplifier currents, alarms and attenuators
- One rack-unit high Receiver Multicoupler (MCU)
- Multifunction LCD readout with multicolored LEDs for status reporting
- Form C contacts for fault reporting through a supervisory system
- Ethernet connector for fast ATP mode switching and alarm details



A steep skirted TEM bandpass filter in the tower box augmented by a ceramic filter in the base unit provide a selective 32 MHz system window.

System Specifications	
13 dB net gain and maximum 6 dB transmission line loss assumed	
Bandwidth	792-824 MHz
System Noise Figure	2.9 dB Typ, 3.5dB Max
3rd Order IIP	> 15 dBm
TTA Net Gain	Fully settable by electronic attenuator
Rejection	110 dB min, 120 dB nominal at 776 and 851 MHz
Net Weight	30.5 lbs for TTA + MCU
Ship Weight	42 lbs

Product Description	Part Number
TTA, 792-824 MHz, tower top box only	429-83H-01-T
Receiver Multicoupler for TTA, 16-port, 792-824 MHz, **to be used in conjunction with** 429-83H-01-T, 90-240 VAC	429-83H-01-M
Receiver Multicoupler for TTA, 16-port, 792-824 MHz, 48 VDC	429-83H-01-M-48

BDA-XXXX-0.5/0.5W-70-A

Indoor MINI BDA's for any 760-960 Bands and PCS / DCS/UMTS/AWS with 0.5W Uplink and 0.5W Downlink (@ 1 dB), and 70dB Gain. Units feature extremely low Noise Figure,Gain and a wide dynamic ALC range. The design is based on a duplexed path configuration with sharp out of band attenuation allowing an improved isolation between the receiving and transmitting paths. These products are the most economical solution for several story buildings with weak signal strength outside the covered structure. Local Visual Alarm indication and Remote alarm interface via D-Sub 9-Pin connector and pigtail are optional.

Frequency Band

Any Cellular
Any Public Safety
Any PCS or DCS* or UMTS/AWS
Full Band PCS, DCS, UMTS or AWS
*NON Contiguous
Any Dual Band

BDA-XXX-1/1W-80-AB BDA-XXX1/10W-80A B BDA-XXX-1/25W-80-A B

Indoor BDA's for any 760-960 Bands and PCS/DCS/UMTS/ AWS with 1 or 2W Uplink and 1W, 2W, 10W, 25W Downlink (@ 1 dB), and 80dB Gain. Units feature exceptionally low Noise Figure and a wide ALC dynamic range.

Options:

- 2W uplink or 2W downlink,
- External filter capability.
- Remote Monitoring Option
- 19" rack
- S1 – Battery Charger in BDA for External Backup
- 90+ dB gain

Frequency Band

SMR or ESMR800 or SMR900
Any Public Safety*
Any Cellular
Any GSM
Any PCS/DCS/UMTS/AWS
Full Band PCS, DCS, UMTS or AWS
Dual Band SMR800/900
Dual Band CELL/PCS
Dual Band Public Safety
*Full Band or NON Contiguous PCS/DCS

ANY CELL ANY PCS BANDS

Indoor BDA's for any 760-960 Bands and PCS/DCS/UMTS/ AWS with 1 or 2W Uplink and 10W or 25W Downlink (@ 1 dB), and 80dB Gain. Units feature exceptionally low Noise Figure and a wide ALC dynamic range.

Options:

- 2W uplink /10W downlink
- External filter capability
- Remote Monitoring Option
- 90+ dB gain
- 19" rack
- S1 Version – including Battery Back Up Charger (not the battery pack).

Frequency Band

SMR or ESMR800 or SMR900
Any Public Safety*
Any Cellular
Any GSM
Any PCS/DCS/UMTS/AWS
Full Band PCS, DCS, UMTS or AWS
Dual Band SMR800/900
Dual Band CELL/PCS
Dual Band Public Safety
*NON Contiguous PCS/DCS

BDA-XXXX-1/10W-80-O or BDA-XXXX-1/25W-90-O BDA-XXXX-1/50-90-O

Outdoor BDA's for any 760-960 bands and PCS/DCS/ UMTS/AWS with 1 or 2W uplink and 10W or 25W downlink (@ 1 dB), and 90dB gain. The units are built in NEMA 4 enclosures, to withstand the outside environment. All units come with standard AC line Surge protection and local visual alarm indicators.

Options:

- 2W uplink
- Remote monitoring 7 pin connector and Pigtail
- External 28 VDC for Battery backup
- 90dB gain – for 10W system
- Complete UPS.

.

Frequency Band

SMR or ESMR or SMR900
Public Safety
ANY CELL
ANY GSM
ANY PCS/ DCS/UMTA/AWS
DUAL BAND SMR 800/900
*Non Contiguous CELL
(A+A' or B+B')
*Non Contiguous DCS or PCS or UMTA /AWS

BDA-UHF or CDMA450-4/4W-70-A and BDA-UHF or CDMA450-4/4W-55-AB

UHF,TETRA or CDMA450 BDA's with 4W uplink and 4W downlink (@1dB) , and 70dB or 55dB gain.

Options:

- Standard Separation for UHF and CDMA 450 are defined as "Corner to Corner". Should you require special non standard separation please contact us for availability.
- Visual Alarm option
- Remote Monitoring Option (with Visual Alarm option)
- NEMA 4 for Indoor and Outdoor

Frequency Band

UHF/ CDMA 450, 55 dB gain
UHF/ CDMA 450 , 70 dB gain

LINE EXTENDER -BDA-XXXX-0.15/0.15W-35-E or A

LINE EXTENDER/BDA's for CELL or PCS with 0.15W Uplink and 0.15W Downlink (@ 1 dB), and 35dB Gain.

In-Line Bi-Directional Amplifiers (Extenders) were designed as Bi-Directional Line Amplifiers for use in Distributed Antenna Systems (DAS) to compensate for cable loss on long cable runs. Extenders are used as indoor repeaters with external AC/DC converters or as In-Line amplifiers when DC power is injected through the BTS port as an option.

Options:

- Visual Alarm
- Remote Monitoring Via 9 Pin Connector and pigtail.
- NEMA4 or 19" Rack.

Frequency Band

SMR
GSM L
GSM H
Cellular AB*
PCS AD
PCS BE
PCS AD
PCSF (full band)
Dual Band
Dual Band 700/800
Dual Band 800/900

ONE WAY BOOSTER

Our INDOOR ONE WAY BOOSTER for, VHF, UHF, GPS, 700, 800, 900, 1800, 1900, 2100 and 2500 MHz, 20dBm power (@ 1 dB) and 70 dB Gain or 25, 27 or 33dBm power (@ 1 dB) and 80dB Gain. Units feature exceptional Low Noise figure and a wide dynamic ALC range.

The boosters are an economic solution when ONLY ONE WAY signal boosting is required.

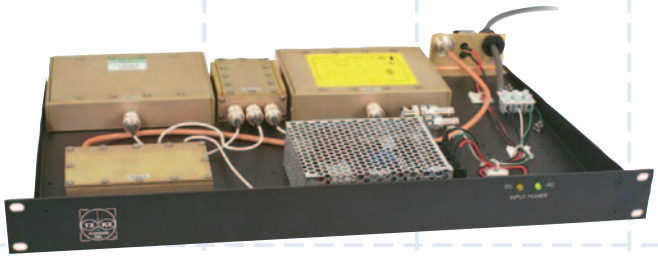
Fiber Links ONE Way or TWO Ways

One-way or Two-way Fiber link are offered in 1:1 and 1:4 Master and Remote configurations. The Master serves not only as a pre-Selector, but as an enhanced selective front End Booster with 35dB Gain. These links offer 0.5W. 1W, 2W or 10W of power (@1dB) and 55 to 70 dB link Gain, superb Noise Figure and Excellent IP3 performance, regardless of the Composite power output for the remote unit. Offered for; VHF, UHF, PSS, SMR, CELL, DCS PCS and UMTS bands as we as Dual Band and Multi Bands on the same DAS. Visual alarms for Laser and Amplifier are included.

Compact Receiver Multicouplers

Receiver Multicouplers

TX RX Systems Inc. has designed a new series of Compact Receiver Multicouplers that offer superior specifications in a one rack unit package. By utilizing broadband preamps and power supplies, three basic products cover most applications in the 118 - 901 MHz range.



Receiver Multicoupler Features:

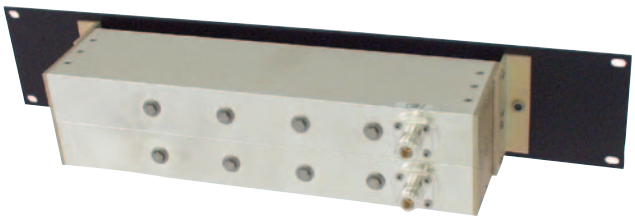
- Sleek, 19" 1 RU rack mount design
- Low noise, high performance amplifiers
- AC & DC power input
  - Auto-Ranging AC Power, 85-264 VAC
  - DC Power Input, 12-24 VDC

Receiver Multicoupler Specifications

MODEL NUMBER	NUMBER OF CHANNELS	BANDWIDTH	SYSTEM GAIN (TYPICAL)*	PREAMP NOISE FIGURE	PREAMP 3RD ORDER OUTPUT INTERCEPT POINT	POWER REQUIREMENT	DC BACKUP	CONNECTORS (IN/OUT)	DIMENSIONS
42-33-01-04N	4	118-174 MHz	22 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-08N	8	118-174 MHz	15 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-12N	12	118-174 MHz	15 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-08	8	118-174 MHz	17 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-33-01	16	118-174 MHz	10 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-57-01-04N	4	380-520 MHz	22 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-08N	8	380-520 MHz	15 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-12N	12	380-520 MHz	15 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-08	8	380-520 MHz	17 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-57-01	16	380-520 MHz	10 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-83A-01-08	8	746-901 MHz	19 dB	1.5 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-83A-01	16	746-901 MHz	12 dB	1.5 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D

Combline Preselector

792-824 MHz



TX RX Systems Inc. Manufacturers a comprehensive line of Preselectors and filters for a broad ranges of applications. Contact your Navair representative for specific product information.

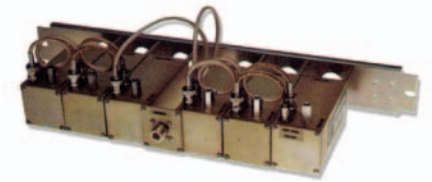
COMBLINE PRESELECTOR 792-824 MHz

Model Number	**89-83C-01-32**
Power Rating	Rx Only
Pass Bandwidth	792-824 MHz
Passband Insertion Loss	1.5 dB nominal
Selectivity @ 776 & 851 MHz	>110 dB
VSWR	1.5:1 max.
Connectors (Input/Output	N-female
Mounting	19" Rack Mount Panel
Dimensions	3.5"H x 19"W x 7"D
Weight	8 lbs est.

DUPLEXERS

DUPLEXERS

Model Number



Model Number
28-37-02A

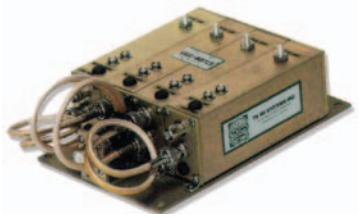
144-174 MHz • 2" Square

Model Number	30-37-01A
Power Rating	100 Watts
Minimum Separation	3 MHz
Channel Isolation	100 dB
Insertion Loss	1.5 dB
Connectors (Tx & Rx / Ant.)	BNC(F) / N(F)
Mounting	19" Rack Mount Bar
Dimensions	5.25"H x 19"W x 7.25"D

144-174 MHz • 6.625" Diameter

Model Number	28-37-02A
Power Rating	400 Watts
Minimum Separation	500 KHz
Channel Isolation	85 dB
Insertion Loss	1.5 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	33"H x 19"W x 15"D

Model Number
28-70-02A



Model Number
28-70-15H

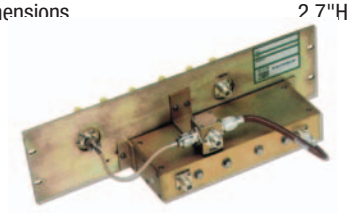
450-470 MHz • 4" Diameter

Model Number	28-70-02A
Power Rating	350 Watts
Minimum Separation	5 MHz
Channel Isolation	100 dB
Insertion Loss	0.6 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	5.25"H x 19"W x 12"D

450-470 MHz • 1.25"x 2" Rectangular

Model Number	28-70-15H
Power Rating	100 Watts
Minimum Separation	5 MHz
Channel Isolation	80 dB
Insertion Loss	1.2 dB
Connectors (Tx & Rx / Ant.)	BNC(F) / UHF(F)
Mounting	Mobile Mount Plate
Dimensions	2.7"H x 5.2"W x 7.4"D

Model Number
28-89-01A



Model Number
26-89-03A

806-869 MHz • Single Frequency Pair

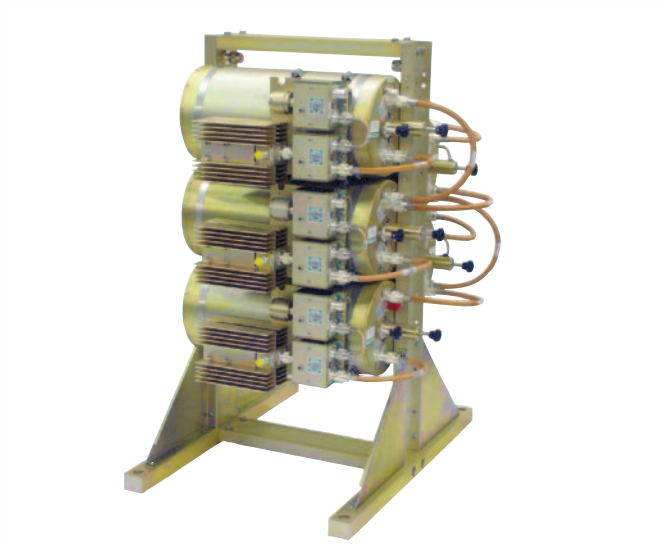
Model Number	28-89-01A
Power Rating	125 Watts
Minimum Separation	45 MHz
Channel Isolation	90 dB
Insertion Loss	0.8 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	5.25"H x 19"W x 10"D

806-866 MHz • Trunking Combline

Model Number	26-89-03A
Power Rating	600 Watts
Minimum Separation	45 MHz
Channel Isolation	45 dB Tx / 77 dB Rx
Insertion Loss	0.5 dB Tx / 1.0 dB Rx
Connectors	N-female
Mounting	19" Rack Mount Panel
Dimensions	5.25"H x 19"W x 9"D

T-PASS® EXPANDABLE TRANSMITTER COMBINERS

746-869 MHz



TX RX Systems **T-Pass®** transmitter combiners utilize innovative, three-port bandpass cavities of patented design (U.S. Patents No. 4,249,147 and 4,493,422) and dual ferrite isolators to provide all the benefits of ordinary cavity/ferrite combiners:

- Significantly lower channel insertion loss than hybrid/ferrite combiners;
- High isolation between transmitters;
- High antenna-to-transmitter isolation;
- High intermodulation suppression
- Excellent transmitter noise suppression.

Unlike ordinary cavity/ferrite combiners, **T-Pass®** transmitter combiners are inherently expandable, broadband and easily adaptable to the most difficult duplex system design requirements.

Superior Expandability and Bandwidth

Ordinary cavity/ferrite combiners rely upon quarter-wave cable transformers, resonant stubs and star junctions for combining groups of two, four or five channels. Mechanical problems quickly develop in the process of trying to locate several groups of cavities in close proximity to each other. Additionally, because of the frequency-sensitive, narrowband nature of the cable transformers, operating bandwidth is usually restricted to about 6% of system center frequency.

T-Pass® combiner systems can be expanded one channel at a time with factory-tuned, easy-to-install expansion channel assemblies. Expansion is usually accomplished without modifications to the existing system, and it amounts to nothing more than placing a new channel assembly, or several, on top of the existing system. New channel frequencies can be above, below, or between existing channel frequencies.

T-Pass® channel interconnect cables are individually optimized to their own channel frequency. No compromises are necessary to accommodate other channel frequencies. Each channel can therefore be anywhere in a very broad frequency range. **T-Pass®** coupling loops and interconnect cables are elegantly designed to operate together as a broadband 50-ohm transmission line. Individual channel frequencies are therefore not restricted to a narrow operating bandwidth, as in the case of ordinary cavity or cavity/ferrite combiners. **T-Pass®** transmitter combiners are inherently capable of operating over bandwidths that span the entire 746-869 MHz frequency range.

Expansion Channel

746-869 MHz **T-Pass®** transmitter combiner channel assemblies consist of the following items:

- A 6.625” 3-quarterwave **T-Pass®** cavity filter;
- A dual ferrite isolator, with RF loads and coaxial cable for connection to cavity.
- An RF sampler to measure RF power reflected into the isolator output load
- Isolator and channel mounting hardware

Expansion assemblies (channel 2 and higher) are supplied with a thruline of the correct length for the new and existing channel frequencies. Starter channels (channel 1, bottom) are supplied with a short circuit on the T-Pass loop.

NEW *All T-Pass Expandable Transmitter Combiners comes with a 5 year OEM warranty.*

Overview

Trilogy's AirCell® cables embody innovative, waterproof air-dielectric design, consistent manufacturing, and quality assurance techniques in accordance with ISO-9001 procedures. The result is a coaxial cable with superior electrical and mechanical performance that completely eliminates water migration.

Trilogy's AirCell® Transline cable is designed for base station applications and is field proven in cellular, PCS, ESMR, paging, broadcast, and microwave applications. AirCell® Transline cables are available with impedances of 50 Ohms in 1/2", 5/8", 7/8", 1-1/4", and 1-5/8" sizes and with impedances of 75 Ohms in 1/2", 5/8", and 7/8" sizes.

To accompany our cables, Trilogy offers a complete line of connectors, accessories, and cable assemblies for all your wireless application needs.

AirCell® Transline cable is designed for the following applications:

PCS, Cellular, and Paging
Trilogy's cables and connectors are ideally suited to the high performance requirements of cellular and PCS applications. Transline cable's excellent insertion loss, VSWR, and intermodulation characteristics enhance both digital and analog systems. Water migration problems are non-existent because of the unique AirCell® design. Trilogy's high performance connectors are easily attached to form a solid watertight assembly that will provide trouble free communications for the life of your system.

Broadcast
Having the easiest installation in the industry makes AirCell® Transline cable the best choice for radio and television broadcast antenna feeders and for AM, FM, shortwave, VHF, and UHF frequencies.

Microwave
Trilogy's AirCell® Transline cable is perfect for all private and PTF microwave applications. Transline cable's superior VSWR performance has been specifically tested for microwave applications. The cable's strong, rugged design as well as flexibility makes it easy to install in any climate, and its weatherproof properties result in a life expectancy of over 15 years.

Enhanced Specialized Mobile Radio (ESMR)
The low attenuation and high shielding effectiveness of AirCell® Transline make it an ideal replacement for braided cable. The low insertion loss of Trilogy's AirCell® Transline cables typically provides double the coverage area for the same transmit power, or it can provide coverage to the same area and use lower transmit power.

Level of Fire Retardancy
The standard Transline cable construction uses a weather-resistant, black polyethylene jacket suitable for indoor, outdoor, or underground installations. For additional requirements regarding flame retardancy, AirCell® Transline cables are available with a non-halogenated, flame retardant jacket, which meets the most stringent fire retardancy requirements of UL, NEC, IEC, MSHA.

AirCell®

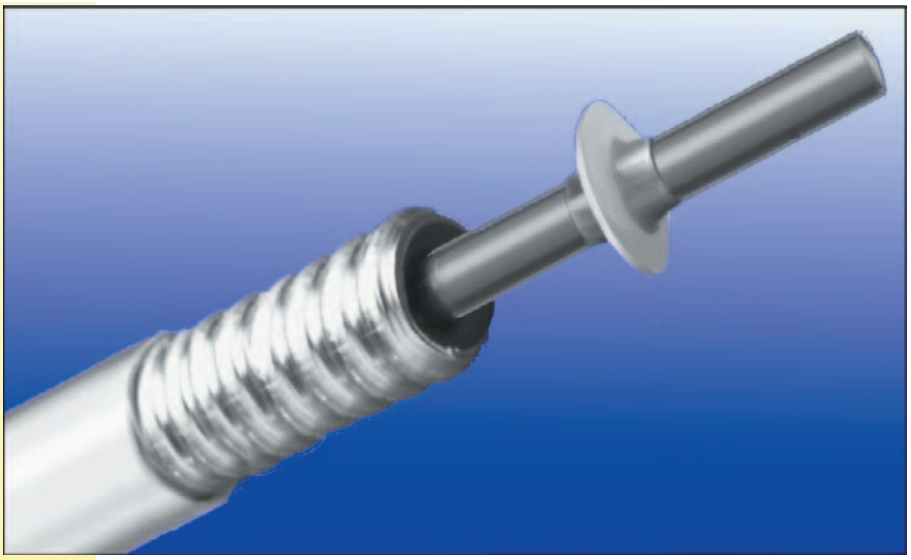
Trilogy COMMUNICATIONS, INC.

Best Plenum Cable For In-Building Applications

AirCell® Plenum Cable

The wireless solution for in-building broadband communication

WORLD'S LEADING PLENUM CABLE



Applications:

- Corporate Offices
- Hospita ls
- Arenas
- Government
- Airports
- High Rise Buildings
- Shopping Centers
- Universitie s
- Hotels and Casinos

World Class Installations:

- N ASA
- AOL Time Warner Headquarters
- Rockefeller Center
- Harvard University
- London's Heathrow Airport
- Apple Computer Headquarters
- U.S. Library of Congress
- Children's Memorial Hospital Chicago
- Las Vegas City Center

Full Broadband Capability
One Cable 75 MHz to 6 GHz

Meets Most Stringent Fire Codes
Complies With UL, NEC Fire Retardancy Requirements

Provides Continuous RF Coverage
Eliminating Dead Spots for Higher Quality Performance

Greater Flexibility and Durability
5 Inch Bend Radius and Endures Multiple Bends

Easiest Installation and Connectorization
Reduces Labor Time and Costs by up to 75%

100% Made in U.S.A.

50 Ohm Plenum, 1/2”

Description	Product Number
Standard Cable*	
1/2", Corrugated, Jacketed UL-910, CATVP	AP012J50
Physical Dimensions	
Center Dia., in (mm)	0.188 (4.78)
Dia. Over Dielectric, in (mm)	0.470 (11.94)
Dia. Over Outer Conductor, in (mm)	0.540 (13.72)
Dia. Over Jacket, in (mm)	0.615 (15.62)
Center Conductor	Copper Clad Aluminum
Outer Conductor	Corrugated Aluminum
Jacket Color	Off-white
Electrical Characteristics	
Maximum Frequency, GHz	10
Peak Power Rating, KW	35
DC Res., Ohms/1000 ft (1000m)	
Center	0.46 (1.51)
Outer	0.51 (1.67)
DC Breakdown, kV	4
Capacitance, pF/ft (m)	22 (72.12)
Inductance, mH/ft (m)	0.057 (0.187)
Jacket Spark, kV RMS	8
Impedance, Ohms	50
Velocity of Propagation	94%
Mechanical Characteristics	
Min. Bend. Radius, in (mm) – Single	2 (50.8)
Min. Bend. Radius, in (mm) – Multiple	5 (127)
Cable Weight, lb/ft (kg/m)	0.129 (0.192)
Bending Moment, ft.lb (N·m)	1 (1.4)
Tensile Strength, lb (kg)	250 (114)
Flat Plate Crush, lb/in (kg/mm)	78 (1.39)
Number of Bends, minimum	15
Number of Bends, typical	25
Temperature, °F (°C)	
Recommended Install	+5 to 194 (-15 to 90)
Recommended Storage	+5 to 194 (-15 to 90)
Operating	+5 to 194 (-15 to 90)

Attenuation and Average Power			
Frequency MHz	Attenuation dB/100 ft	dB/100m	Avg. Pwr. kW
5	0.159	0.56	17.6
10	0.225	0.82	12.0
20	0.319	1.10	8.95
30	0.391	1.35	7.29
50	0.507	1.74	5.66
88	0.676	2.30	4.28
100	0.722	2.47	3.98
108	0.751	2.56	3.84
150	0.889	3.03	3.20
174	0.960	3.26	3.03
200	1.03	3.50	2.80
300	1.27	4.32	2.27
400	1.48	5.01	1.96
450	1.57	5.32	1.85
500	1.66	5.62	1.75
512	1.68	5.70	1.73
600	1.83	6.20	1.58
700	1.99	6.70	1.47
800	2.13	7.17	1.37
824	2.19	7.28	1.35
894	2.26	7.61	1.29
960	2.35	7.90	1.24
1000	2.40	8.10	1.21
1250	2.71	9.09	1.08
1500	2.99	10.0	0.98
1700	3.20	10.0	0.98
1950	3.45	11.6	0.85
2000	3.50	11.7	0.84
2300	3.76	12.6	0.78
2400	3.92	12.9	0.77
3000	4.38	14.5	0.68

Standard conditions:
For attenuation, VSWR 1.0, ambient temperature 20°C (68°F)
For average power, VSWR 1.0, ambient temperature 40°C (104°F), inner conductor temperature 100°C (212°F), no solar loading

***Conduit cable (UL-444) is also available upon request.**

50 and 75 Ohm, Plenum and Plenum Radiating

	50-Ohm				75 Ohm
Cable Size, 1/2"	Plenum	Plenum	Plenum Radiating	Plenum Radiating	Plenum
Jacketing	**Product Code**	**Product Code**	**Product Code**	**Product Code**	**Product Code**
Jacketed UL-910, CATVP	AP012J50	APC012J50	AQ012J50	AQC012J50	AP012J75
Unjacketed UL-910	AP012U50				AP012U75
Characteristics					
Outer Conductor	Aluminum	Copper	Aluminum	Copper	Aluminum
Dia. Over Outer Conductor, in (mm)	0.540 (13.72)	0.540(13.72)	0.540 (13.72)	0.540 (13.72)	0.540 (13.72)
Dia. Over Jacket, in (mm)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)
Cable Weight, lb/ft (kg/m)					
Jacketed	0.129 (0.192)	0.19 (0.28)	0.122 (0.181)	0.17 (0.25)	0.104 (0.155)
Unjacketed	0.082 (0.122)				0.058 (0.086)
Min. Bending Radius, in (mm)	5 (127)	5 (127)	5 (127)	5 (127)	5 (127)
Impedance, Ohms	50	50	50	50	75
Velocity of Propagation	93%	96%	93%	96%	95%
Maximum Frequency, GHz	10	10	10	10	12
Peak Power Rating, Kw	35	40	35	40	35
Attenuation, dB/100 ft (dB/100 m)					
50 MHz	0.51 (1.74)	0.44 (1.44)	0.64 (2.11)	0.65 (2.12)	0.48 (1.57)
100 MHz	0.72 (2.47)	0.63 (2.05)	0.97 (3.19)	0.92 (3.01)	0.71 (2.32)
150 MHz	0.88 (3.03)	0.77 (2.53)	1.27 (4.15)	1.12 (3.69)	0.87 (2.85)
450 MHz	1.57 (5.32)	1.36 (4.46)	2.60 (8.52)	1.96 (6.42)	1.48 (4.87)
900 MHz	2.33 (7.64)	1.95 (6.41)	4.09 (13.4)	2.78 (9.13)	2.14 (7.03)
1000 MHz	2.40 (8.10)	2.07 (6.78)	4.27 (14.0)	2.94 (9.63)	2.26 (7.41)
1700 MHz	3.20 (10.0)	2.74 (9.00)	5.66 (18.6)	3.85 (12.63)	3.01 (9.88)
2000 MHz	3.50 (11.7)	2.99 (9.82)	6.43 (21.1)	4.18 (13.72)	3.29 (10.8)
2300 MHz	3.76 (12.6)	3.23 (10.59)	7.10 (23.32)	4.49 (14.74)	3.52 (11.6)
2400 MHz	3.92 (12.9)	3.22 (10.57)	7.34 (24.1)	4.59 (15.07)	3.60 (11.8)
3000 MHz	4.38 (14.5)	3.73 (12.25)	8.82 (29.0)	5.15 (16.90)	4.03 (13.2)
Avg Pwr Rating, kW			**Coupling Loss, dB, at 6ft (2m)**		**Avg Pwr Rating, kW**
50 MHz	5.66	6.34	49	55	2.93
100 MHz	3.98	4.46	49	55	1.97
150 MHz	3.20	3.63	49	56	1.61
450 MHz	1.85	2.06	61	63	0.94
900 MHz	1.29	1.43	63	65	0.65
1000 MHz	1.21	1.35	64	65	0.62
1700 MHz	0.98	1.02	65	66	0.46
2000 MHz	0.84	0.93	68	67	0.43
2300 MHz	0.78	0.86	69	68	0.40
2400 MHz	0.77	0.82	70	68	0.39
3000 MHz	0.68	0.75	70	69	0.35

RF Surge Protection

Table below allows comparison between the 3 technologies of RF coaxial surge protectors, in order to select the right solution regarding the application and the requirements.

Technology	**Gas tube**	**DC Block**	**Quarter wave**
CITEL series	***P8AX***	***CXP-DCB***	***PRC***
Principle	Sparkover	Sparkover + Filtering	Adapted short-circuit/selective band filter
Residual voltage	from 70V to 600 V in relation with the dV/dt, then arc regime (short-circuit of the line in the full bandwidth). RF signal disturbed during the protection operation.	< 100 V Short-circuit of the line in the full bandwidth : RF signal disturbed during the protection operation.	< 20 V RF signal not disturbed during the protection operation.
Bandwidth	DC to 3GHz (dependent of the coaxial connector and of the impedance)	125-1000 MHz	Narrox band (GSM, DCS1800, PCS, DECT, GPS) Wide band (e.i. 1,3 - 2,8 GHz)
DC injection	Compatible	Not compatible	Not compatible
8/20 s discharge current capability	10 kA	10 kA	Fonction de la connectique : 100 kA pour le 7/16, 50 kA pour le N
Life expectancy	Linked to the GDT stress	Linked to the GDT stress	Illimited
Connectors	N, BNC, TNC, UHF, SMA, 7/16	N, BNC, TNC, F	7/16, N, TNC....

Installation

The efficiency of coaxial protectors is highly dependent on proper installation, in particular their connection to the earthing network of the installation.
The following installations rules must be strictly observed to insure the efficiency :

Equipotential bonding network : all the bonding conductors of the installation must be interconnected and connected to the installation earthing network.

Optimized connection of the protector to the bonding network : to reduce the residual voltages during lightning discharge currents, the connection of the protector to the bonding network must be as short as possible (less than 50 cm) and has a proper cross section (at least 4 mm≤).
The ´feedthrough mounting" versions meet perfectly all these requirements.
Warning : for good contact, remove carefully all paintings or insulating coatings.

Location of the protectors : they should preferably be placed at the entrance of the installation (to limit the penetration of lightning currents) and also near sensitive equipment (to enhance protection).

2 types of mounting

Feedthrough mounting
Direct mounting of the surge protector on the grounded frame at the installation entrance :
- perfect connection to the bonding network
- best location (conduction of the surge currents at the entrance of the installation)
- good mechanical withstand.

Alternative mounting
- connection to the bonding network by wire (4 mm≤ minimum and shortest length possible).

RF Coaxial Protectors

P8AX - PRC - CXP

CITEL offers a comprehensive range of surge protectors designed for RF coaxial lines. Various technologies are available to comply the different uses and requirements.

.

P8AX series

The P8AX series is based on gas discharge tube (GDT) and designed for RF line surge protection. Available for different power and with coaxial connectors (N, BNC, TNC, UHF, SMA, 7/16, 7/8 cable), P8AX units could be provide in feedthrough mounting version (P8AX...W) and with various impedance (50 or 75 ohms).

Main characteristics :

- *Insertion losses < 0,2 dB*
- *VSWR < 1,2*
- *Imax : 20 kA (8/20 s)*
- *Bandwidth : 0 to several GHz*
- *Connectors: N, BNC, TNC, 7/16, F, SMA, UHF, 7/8 cable.*

PRC series

PRC protectors are based on 'Quarter-Wave' technology and are available in more than 30 versions : various connectors (7/16, N, TNC, 7/8 cable, BNC) and bandwidth (from 450 MHz to 6 GHz). These devices provide a very low residual voltage and are maintenance free.

Main characteristics :

- *Insertion losses < 0,2 dB*
- *VSWR < 1,2*
- *Bandwidth :*
  - *430-460 MHz*
  - *870-950 MHz*
  - *1700-1950 MHz*
  - *800-2200 MHz (wide band)*
  - *1700-2200 MHz*
- *Imax : 100 kA (8/20 s)*
- *Connectors : 7/16, N, BNC, TNC, 7/8 cable.*

CXP and CXP-DCB series

CXP protectors are based on GDT to provide high discharge current capability without destruction. Its particular mounting allows good adaptation to radio and TV system. Typical applications include radio terminals and TV sets (antenna, cable or satellite)

CXP-DCB version is built-in with an extra 'DC block' stage in order to reduce low frequency disturbances (DC and lightning voltages) and decrease significantly the residual voltage.

Main characteristics (CXP) :

- *Insertion losses < 0,5 dB*
- *VSWR < 1,3*
- *Imax : 20 kA (8/20 s)*
- *Bandwidth : DC - 1000 MHz*
- *Connectors : F, BNC, SE, N ..*

Main characteristics (CXP-DCB) :

- *'DC Block' feature*
- *Insertion losses < 0,15 dB*
- *VSWR < 1,2*
- *Imax : 5 kA (8/20 s)*
- *Bandwidth : 125 - 1000 MHz*
- *Connectors : N, BNC*

Note: Comprehensive information about these ranges could be found in the dedicated CITEL catalog : 'Surge Protective Protection for coaxial lines'.

3 technologies of coaxial protectors :

- **Gas tube : P8AX series**
- **Quarter wave : PRC series**
- **Gas tube + Filter : CXP-DCB series**

Various types of coaxial connectors

Low insertion losses

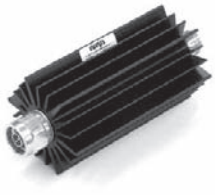
BIRD®
TECHNOLOGIES GROUP

Components

Attenuators

Bidirectional Couplers

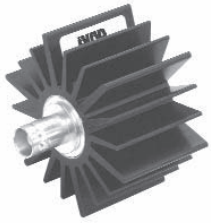
Dividers/Couplers



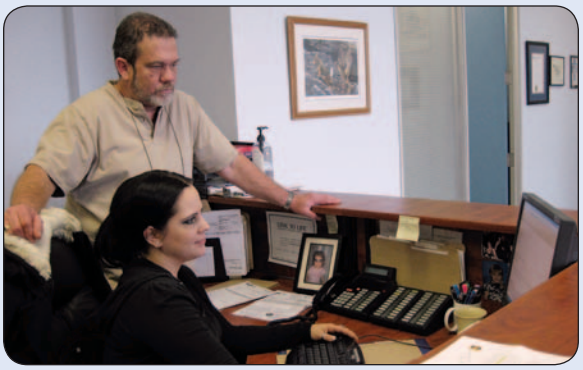
Filters

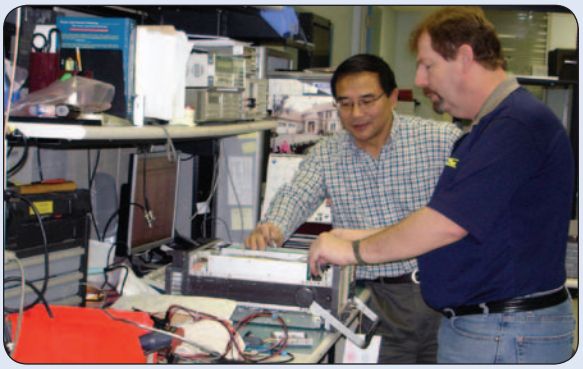
Loads RF Switches

Signal Samplers



Navair National Sales/Service Team





Customer Service Programs

Navair Service Solutions

Maximize on your capital product purchasing through an extended service plan from Navair. Selection of the right plan for your organization allows you to purchase with confidence knowing you have full support from factory trained technicians.

Direct OEM Warranty Service

Navair is the factory service centre for Bird Electronics, General Dynamics, Tele-Instruments. Navair is the only Canadian service centre authorized to perform factory level modifications ensuring your instruments remain current.

Navair Direct Service

Navair offers product repair, calibration and certified calibration services to ensure your instruments are maintained to all OEM specifications. Navair staff have over seventy (70) years combined experience in the Communications, Test and Measurement Industry a tradition you can depend on. Navair Direct offers the following value added services:

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- Repair Estimate
- Factory supplied hardware and software upgrades, which enhance your instrument performance.
- Ninety (90) day warranty on labour and parts replaced
- Direct factory replacement parts to ensure compliance with all OEM specifications.
- **"Preferred" Customer Status**

Place all your instrumentation under an annual or multiple year service agreement with Navair and enjoy a discounted labour rate on repair.

NAVAIR CALIBRATION SERVICES

Navair is a registered ISO 9002 company with state of the art calibration facilities. We offer complete calibration services coast to coast on most products sold by Navair in Canada.

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- Shipping carton available
- Automatic annual recall for calibration
- Instrument loaner available (subject to availability)

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